

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/613,044

Attorney Docket Q79465

REMARKS

In the present Amendment, claim 1 has been amended to specify the molecular weights of the components (D1) and (D2). These amendments are supported by the specification, for example, page 132, 2nd paragraph and page 154, 4th paragraph.

Claims 2, 13 and 17 have been amended to replace $-S(-O)_2-$ with $-S(=O)_2-$. This amendment is supported by the specification, for example, original claims 13 and 17. Claim 17 has also been amended to improve its form. These amendments are not to be deemed to narrow the scope of the claims.

Claims 22 and 23 have been added. Claims 22 and 23 are supported by the specification, for example, page 132, 1st paragraph and page 155, 2nd paragraph.

Claim 24 has also been added. This claim recites that the amount of component (B) is from 3 to 65% by weight. Support for claim 24 may be found, for example, at page 62, second paragraph of the specification.

No new matter has been added and entry of the Amendment is respectfully requested. Upon entry of the Amendment, claims 1-24 will be all the claims pending in the application.

I. Response to Rejections Under 35 U.S.C. § 102

a. In Paragraph No. 2 of the Action, claims 1-12 and 17-21 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Kodama et al (EP 1179750) ("EP '750").

Applicants submit that this rejection should be withdrawn because Kodama et al EP '750 does not disclose or render obvious the resist composition of the present invention.

EP '750 discloses several embodiments for a positive photoresist composition, including

(i) a composition comprising a photoacid generator (A), a resin (B) containing a monocyclic or polycyclic alicyclic hydrocarbon structure and increasing its solubility to an alkali

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developer by the action of an acid, an onium salt (C) of a carboxylic acid, and, optionally, an acid-decomposable dissolution-inhibiting compound (D) (Abstract; Paragraph No. [0188]);

(ii) a composition comprising a photoacid generator (A), an onium salt (C) of a carboxylic acid, an acid-decomposable dissolution-inhibiting compound (D) and a resin (E), wherein resin (E) is alkali-soluble, contains a monocyclic or polycyclic alicyclic hydrocarbon structure and does not contain an acid-decomposable group (Paragraph Nos. [0015]-(18), [0188] and [0202]); and

(iii) a composition comprising a photoacid generator (A), a resin (B), an onium salt (C) of a carboxylic acid and a resin (E), wherein resin (E) is water-insoluble and alkali-soluble, and does not contain an acid-decomposable group (Paragraph No. [0205]).

In embodiment (ii) above, resin (E) preferably contains a carboxy group and is, e.g., a copolymer of methacrylate containing an alicyclic hydrocarbon structure which does not contain an acid-decomposable group and (meth)acrylic acid, or a resin of (meth)acrylate containing an alicyclic hydrocarbon structure having a carboxy group at the terminal thereof (Paragraph No. [0203]).

Resin (E) in the composition containing (A), (C), (D) and (E) of EP '750 as defined above does not meet the requirements of component (D1) of the present invention. Specifically, EP '750 does not describe or suggest that resin (E) may contain a phenol skeleton.

The composition of embodiment (iii) of EP '750 is different from the present invention in that it does not contain a compound which corresponds to component (B) of the present invention.

This leaves embodiments (i) and (ii) of EP '750 for discussion.

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In the present invention, the relationship of the compound (B) and the compound (C) is important. That is, it is important to satisfy the relationship: $E_{pc} - E_{pa} > 0$ (i.e., the relationship of the oxidation potential and the reduction potential recited in claim 1). Accordingly, it is necessary to select a combination of the compound (B) and the compound (C), which satisfies the relationship as recited.

In order to employ the dissolution inhibitor of EP '750 (i.e., component (D) in EP '750) as the compound (B) of the present invention, it would be necessary to appropriately select the compound (C) so that the relationship: $E_{pc} - E_{pa} > 0$ is satisfied. However, such a combination is not disclosed, suggested, or even alluded to in EP '750. Accordingly, Applicants strongly believe that the present invention is different from and patentable over EP '750.

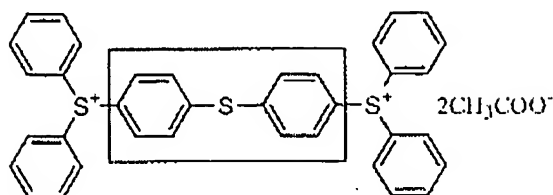
In addition, present claims 5 and 18, 8-10, and 7 and 17 are patentable over EP '750 for independent reasons.

In the Amendment filed February 22, 2005, Applicants pointed out that EP '750 does not disclose or suggest a compound containing $Ra-Re-O^*$ or $Ra-O^*$ as recited in present claims 5 and 18, respectively. See page 23 of the Amendment. The Examiner does not rebut Applicants' position. Moreover, the Examiner does not rebut Applicants' position that none of the acid-decomposable dissolution-inhibiting compounds disclosed on pages 81 and 82 of EP '750 and relied upon by the Examiner is a phenol derivative, contains a vinyl ether structure, or is a cyclic ether compound as recited in present claims 8-10. Applicants reiterate these arguments.

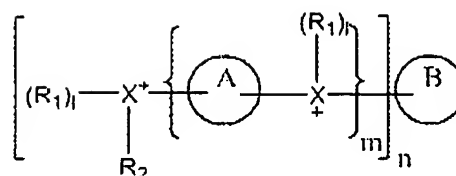
The Examiner appears to consider that compound II-62 disclosed in EP '750 (shown below) meets the requirements of formula VIII recited in present claims 7 and 17 (shown below):

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compound II-62 of EP '750



formula (VIII) of present invention

Present claims 7 and 17 require that at least one of connections of X^{+} 's with A or B is a structure in which X^{+} 's connected are in the same conjugation. However, this requirement is not met by compound II-62 of EP '750. Specifically, the S atom in compound II-62 of EP '750 (in the block) terminates the conjugation shared by the benzene rings and S^{+} from both ends. That is, the two S^{+} atoms in compound II-62 of EP '750 are not in the same conjugation.

For all of these reasons, Applicants respectfully submit that the section 102(b) rejection of claims 1-12 and 17-21 based on Kodama et al EP '750 should be reconsidered and withdrawn.

b. In Paragraph No. 3 of the Action, claims 1-12 and 18-21 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Kodama et al (U.S. Pat. No. 6,485,883).

Applicants submit that this rejection should be withdrawn because Kodama et al '883 does not disclose or render obvious the resist composition of present claims 1-12 and 18-21.

Kodama et al discloses a positive photosensitive composition comprising a resin having an acid-decomposable group (A), an onium salt (B) of a carboxylic acid, an acid generator (C), a dissolution inhibitor (D), a nitrogen-containing basic compound (F), and a surfactant (G) (col. 2, lines 49-61 and col. 3, line 3-col. 4, line 55, in particular, col. 3, lines 8-13).

Kodama et al also discloses a positive photosensitive composition comprising an onium salt (B) of a carboxylic acid, an acid generator (C), a dissolution inhibitor (D), an alkali-soluble

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resin (E), a nitrogen-containing basic compound (F), and a surfactant (G) (col. 2, line 62-col. 4, line 55, in particular, col. 3, lines 8-13).

In comparing the disclosure of Kodama et al '883 to the present claims, the resins (A) and (E) of Kodama et al '883 would correspond to the resins (D2) and (D1) in the present claims, respectively. However, there is a difference in the relationship of the dissolution inhibitor of Kodama et al '883 (i.e., component (D)) and the component (B) of the present invention, similar to the difference between EP '750 and the present invention.

The dissolution inhibitors (D) described in Kodama et al '883 do not have the function as the component (B) of the present invention. Moreover, Kodama et al '883 does not disclose, suggest or even allude to a combination which satisfies the relationship: $E_{pc}-E_{pa} > 0$ (in relation to the component (C)). Accordingly, Applicants strongly believe that the present invention is clearly different from Kodama et al '883.

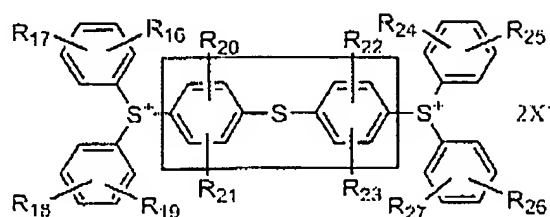
Claims 5 and 18, and claims 19 and 20 are patentable over Kodama et al '883 for the following independent reasons:

Kodama et al discloses photoacid generators (B) which are an onium salt of a carboxylic acid, and (C) a compound which generates a sulfonic acid upon irradiation. However, Kodama et al does not appear to disclose or suggest an acid generator containing an alkoxide anion. Accordingly, Applicants traverse the rejection of claims 5 and 18 on this ground.

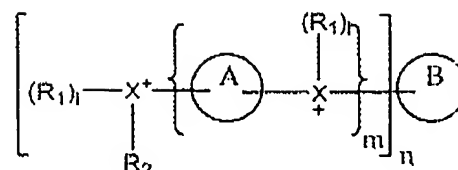
The Examiner appears to consider that formula III of Kodama et al (shown below) meets the requirements of formula VIII recited in present claims 7 and 17 (shown below):

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formula (III) of Kodama et al



formula (VIII) of present invention

Present claims 7 and 17 require that at least one of connections of X^{+} 's with A or B is a structure in which X^{+} 's connected are in the same conjugation. However, this requirement is not met by formula III of Kodama et al. Specifically, the S atom in formula III of Kodama et al (in the block) terminates the conjugation shared by the benzene rings and S^{+} from both ends. That is, the two S^{+} atoms in formula III of Kodama et al are not in the same conjugation.

Claim 17 is not included in the rejection. Claims 19 and 20 depend from claim 17 and thus have a narrower scope than claim 17. For this reason, Applicants traverse the rejection of claims 19 and 20.

For all of these reasons, Applicants respectfully request reconsideration and withdrawal of the section 102(e) rejection of claims 1-12 and 18-21 based on Kodama et al '883.

II. Response to Rejections Under 35 U.S.C. § 103

a. In Paragraph No. 5 of the Action, claims 1-6 and 8-12 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi et al (U.S. Pat. No. 6,136,500).

Applicants submit that this rejection should be withdrawn because Kobayashi et al '500 does not disclose or render obvious the resist composition of present claims 1-6 and 8-12.

Kobayashi et al discloses a positive radiation sensitive resin composition comprising (A)(a) an acid-decomposable group-containing resin, or (b) an alkali-soluble resin and an alkali

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dissolution controller, and (B) a photoacid generator comprising a compound that upon exposure to radiation generates a carboxylic acid having a boiling point of 150 degrees C or higher, and a compound that upon exposure to radiation generates an acid other than a carboxylic acid.

Kobayashi et al also discloses a negative type radiation sensitive resin composition comprising (C) an alkali-soluble resin, (D) a cross-linking agent, and the component (B) (Abstract).

The positive type resin composition of Kobayashi et al differs from the present invention comprising components (A), (B), (C) and (D2) in that it does not contain a compound which corresponds to component (B) of the present invention.

This leaves the negative type resin composition of Kobayashi et al for discussion.

The component (B) in the composition of Kobayashi et al does not meet the requirement of the component (C) of the present invention. This is because the component (B) in Kobayashi et al does not satisfy the relationship: $E_{pc} - E_{pm} > 0$. Accordingly, the present invention is unobvious in view of Kobayashi et al.

Claims 8-9 and claim 5 are patentable over Kobayashi et al for the following additional independent reasons:

The Examiner does not rebut Applicants' arguments that Kobayashi et al does not disclose or suggest a cross-linking agent which is a phenol derivative containing from 1 to 10 benzene ring atomic groups per molecule and having at least one hydroxymethyl group and at least one alkoxymethyl group per molecule, or a cross-linking agent containing vinyl ether groups, as recited in present claims 8 and 9, respectively. Still further, the Examiner does not rebut Applicants' argument that Kobayashi et al. does not disclose or suggest a compound containing Ra-Rc-O' as recited in the present claim 5. See page 24 of the Amendment of February 22, 2005. Applicants reiterate these arguments.

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For the above reasons, Applicants respectfully request that the section 103 rejection of claims 1-6 and 8-12 based on Kobayashi et al '500 be reconsidered and withdrawn.

b. In Paragraph No. 6 of the Action, claims 7 and 13-21 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kobayashi et al in view of Kodama et al (EP or '883).

Applicants submit that this rejection should be withdrawn because Kobayashi et al '500 and Kodama (EP or '883) do not disclose or render obvious the resist composition of present claims 7 and 13-21.

As set forth above, compound II-62 of EP '750 and formula (III) of Kodama et al '883 do not meet the requirements of formula (VIII) of the present invention. Accordingly, even if there were a motivation to combine the references, the combination would not result in the present invention containing a compound having a partial structure of formula (VIII).

For these reasons, Applicants submit that the section 103 rejection of claims 7 and 13-21 based on Kobayashi et al in view of Kodama et al (EP or '883) should be reconsidered and withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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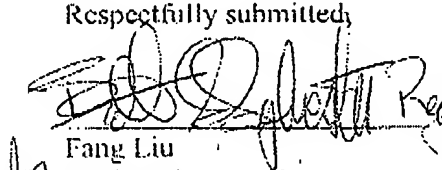
Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373

CUSTOMER NUMBER


Fang Liu
Registration No. 51,283

Date: October 17, 2005

CERTIFICATION OF FACSIMILE TRANSMISSION

Sir:

I hereby certify that the above identified correspondence is being facsimile transmitted to Examiner Amanda C. Walke at the Patent and Trademark Office on October 17, 2005 at (571) 273-1337.

Respectfully submitted,


Brett S. Sylvester